

## 1. What is RVA?

Crossroads' ReadVerify® Appliance, or RVA, is stand-alone appliance ensuring the proactive readability and protection of data written to tape. This is accomplished through advanced media management features such as performance and utilization analysis, tape media and drive statistical data logging, and automated report and alert functionality. RVA validates the readability of data, tape media, and tape drives. It provides historical resource monitoring and reporting enabling proactive management of tape media errors, resulting in increased data integrity and cost savings. The device is contained in a compact 1U Linux rack-mount appliance, connected via Fibre Channel with an HTML management and reporting user interface.

## 2. What is meant by a “stand-alone” appliance solution?

The ReadVerify Appliance is a 1U system connected via Fibre Channel with a browser-based GUI. The appliance connects into the SAN specifically within the domain of an automated tape library. It uses a polling-based, out-of-band operation that does not interfere with the backup operation. Within the appliance are a processor, memory, and a hard disk to store the database, and provide advanced management features and functionality such as tape and drive statistical data logging with automated report and alert functionality. The appliance periodically polls the library and tape drives to obtain tape and drive historical data, which is stored within the database. The database component resides on the hard disk in the appliance, which is used to store the RVA configuration and records retrieved. The HW and SW support the regulatory compliancy of retaining records for the periods required by the latest standards.

## 3. What causes backup and recovery failures?

The most frequent causes of failed backups, according to a March 2005 survey conducted by Storage Magazine and SearchStorage.com, were related directly to tape cartridges (52.9%), damaged tapes (38.9%) and dirty tape heads (36.2%). Nearly 1/3 of respondents stated that tape failure situations were significant and disruptive. While there are many causes, some of them human related and others more broadly attributable to the backup software, network or environment, the media related defects are the primary causes of backup failures and are also the prime reason for recovery error.

## 4. How often will someone experience a backup or recovery failure?

According to the same 2005 Storage magazine survey, more than 31% of data restorations attempts fail. Different analysts indicate that backups fail anywhere between 25% up to 60%.

## 5. Why would customers need this solution? What are the benefits of RVA?

- Tape Media Integrity – Enables proactively media management for suspected degradation, providing a vehicle to remove error-prone or defective media.
- Utilization and Performance - RVA measures the utilization of each unique drive in the overall automated backup system (backup application, network, and tape drives within and automated tape library), providing a method to tune the environment for the smallest possible backup window. Additionally, the actual performance of each individual drive is measured (not the theoretical performance) which enables the user to determine if their environment is configured properly to maximize the use of the tape assets.
- Monitoring, Automatic Alerts and Reporting – Provides secure, instant access to view status of drive utilization, comparison between drives, drive failure, cleaning status, associated tape media, slot configuration, tape degradation and errors. Alert and report configurations are all easily managed from an HTML web-based console. Alerts and reports are generated and stored as a log for reference and sent out automatically via email on a regular, pre-determined schedule (e.g. per day, per month, or on a per event basis).
- Seamless Heterogeneous Deployment - Interoperates with any make or model of tape drive, library or backup application. Supports multi-vendor environments.
- No Performance Degradation of Servers or Clients – Installs in a Fibre Channel network out-of-band of the backup data path.
- Disaster Recovery - The current backup environment is one that accepts failure (in the backup process) and deals with recovery failure by making multiple copies and/or repeating the process on a regular basis. In this manner the user can minimize their exposure by having enough repetitions such that one of them will be good. This is both costly in media usage and system time (backup window). Many users willingly pay for this failure wrought process by duplicating systems for improved backup speed and repeating specific backups for systems that are classified as critical. The problem is that they user doesn't ever know or is

certainly never confident that a data recovery will work until it actually completes successfully. This creates a very reactive and stressful environment which is already fraught with anxiousness since some or all systems are currently down. The ReadVerify Appliance gives the user a proactive method of managing their media such that they have a higher sense of confidence in the systems ability to read the data on the media if required – before a disaster occurs and before the data is required to bring the data center back on line.

- Satisfy Regulatory and Policy Compliance Mandates – Data retention is only half the mandate: SOX, GLBA, SEC 17a-4 rule require retention AND retrieval of data. The RVA Provides the user with the added assurance of the overall tape system's capability to read the media..
- Meet the Demands Incurred During Litigation and Discovery Requirements - Companies can face non-frivolous internal and external lawsuits at any given time. Failure to produce data under court orders can result in severe civil or even criminal penalties. (Kaufman v. Kinko's Inc., Braxton v. Farmers Insurance Group, Tulip Computers International v. Dell Computer Corp.1). Since keeping all data on-line is expensive, the backup process is a common method of removing and archiving data. When the requirement to produce information results in a data recovery operation by the company from tape media, a recovery error is not an acceptable reason for failure to comply with discovery requests. Having the RVA enables the user to proactively manage their media archive and take steps to guarantee that all information is available – before it is required!
- Pre-empt Catastrophic Recovery Costs or Inability to Recover - One of the largest liability risks a company faces today is the inability to recover data.. The potential for lost revenue and loss of sensitive data such as financial, personnel records or intellectual property are all immeasurable cost as well as in many cases immeasurable losses. In some cases this even leads to the ultimate closure of the business.
- Avoid Loss of Corporate Reputation and Viability – A company's ability to recover from a catastrophic data loss is directly correlated with the company's ability to survive. Customers, shareholders, and even employees expect a business to recover from data loss, in fact in most cases they don't even want to know that a recovery operation was even required. Therefore, and situation that differs in which a company's lack of recovery capability becomes known will cause issues with its reputation and ongoing business viability.

#### **6. Which backup applications does RVA work with?**

RVA works the majority of backup applications on the market, including products from Veritas, CA, EMC and IBM/Tivoli. The RVA works independent of the backup application and should work with any of the applications on the market; however, Crossroads testing process has only verified the majority market leading applications.

#### **7. Does RVA require backup application-specific software agents to be installed on backup servers?**

No. A key advantage of RVA over other reporting tools is that the appliance is completely independent of the backup application in use.

#### **8. RVA is positioned as a complimentary, not a competitive product to a client's existing backup application. Please explain.**

RVA is architected to work with the majority of backup applications available in the market, including products from Veritas, CA, EMC and IBM/Tivoli. All of these products have monitoring and reporting capabilities. The monitoring and reporting features of these products are a proficient view into the success or failure of the individual backup jobs.

RVA monitoring and reporting does not focus on the individual backup jobs, rather, it gives visibility to the overall health of the backup environment and components. RVA focuses, reports and alerts on trends within the backup environment.

What does this mean?

What this means is that RVA enables the backup administrator to take a much more holistic, preemptive and proactive approach to ensuring the overall health of the backup environment. RVA reports daily and weekly and alerts on performance trends of the critical attributes of the media and devices within the backup environment. While backup applications tend to be focused on the backup job, RVA does trend analysis, reports and alerts on every device within the library, including the tape media, and provides heterogeneous library support. RVA correlates the tape media to the drive, further enabling the trend analysis functionality. RVA's ability to proactively alert the administrator on such critical events as media and drive degradation ensures that proper actions can be taken before backup failures occur.

RVA does not rely on combing through the log files of the backup applications to extract information, which can be tedious and time consuming. As a drop in, non-intrusive appliance installed within the domain of an automated tape library, RVA polls the library and tape drives. RVA does analysis, reporting and alerting based on the data that is captured and stored in the RVA database as a result of this polling. Graphical "at a glance" views present this critical information. This ensures instant access to the all of the information regarding the performance and health of the backup environment, including drive utilization, comparison between drives, drive failure, cleaning status, associated tape media, slot configuration, tape degradation and errors.

So, is it safe to say that RVA delivers to the backup administrator a level of intelligence, assurance, and information around the overall health of the backup environment that is not delivered by the native backup application?

Yes. Again, RVA reporting and alerting compliments the information that is provided by the job focused backup application reporting. RVA provides the intelligence to tune the environment to enable the smallest possible backup window and configure the environment to maximize the use of tape assets.

#### **9. What is the expected ROI for using RVA?**

- Support for Measurable ROI Including:
  - Performance gains in tape usage – Proactively assess tape media validity and alert on media degradation; eliminate arbitrary media end-of-life, resulting in fewer tape cartridge purchases
  - Resource balancing – Eliminate spending on unnecessary drives; eliminate incomplete backups with visibility into over and under-utilization of drives
- Support for Immeasurable ROI Including:
  - Tape integrity assurance – Know that data written to media is recoverable **WHENEVER** it is required

#### **10. How many reports are provided within RVA?**

The ReadVerify Appliance (RVA) can automatically generate reports on a daily or weekly basis according to parameters that you define. By default, a daily report and a weekly report are generated.

The following information is provided in daily reports:

- Library details
- Drive graphs and statistics for each drive in the library, including the following:
  - Drive utilization graph, which shows the amount of time each drive in the library was used during read and write processes
  - Drive performance graph, which shows the write performance of the last 25 tape loads
  - Tape usage table, which lists each tape loaded in the drive and the statistics for each Load

The following information is provided in weekly reports:

- Library details
- Alerts generated in the last seven days
- Drive utilization graph for all drives in the library, which shows the amount of time each drive in the library was used during read and write processes
- Drive usage table for all drives in the library, which provides performance, usage, and error information for each drive
- Tapes loaded in each drive, including statistics about each tape load
- Tape watch list, which lists each tape that may need to be replaced in the library
- Drive graphs and statistics for each drive in the library, including the following:
  - Drive utilization graph, which shows the amount of time each drive in the library was used during read and write processes
  - Drive performance graph, which shows the write performance of the last 25 tape loads
  - Tape usage table, which lists each tape loaded in the drive and the statistics for eachload

#### **11. How hard is it to add a report?**

Templates are provided to facilitate report creation. The template steps the user through the report definition/creation process which enables the system to automatically generate the report on a daily or weekly basis.

#### **12. I have read literature which describes the RVA as a device linked to tape storage. Does this appliance also incorporate with disk-based storage?**

No. The appliance reports on tape library activities, and reports on critical backup information relating to tape media, drives and library elements. The appliance does contain disk storage used to archive reporting information.

**13. With the increased requirements in tape storage longevity and the fact that RVA is an appliance which extends that longevity, how exactly is that accomplished?**

Do you have statistics that demonstrate enhanced storage longevity?

Since the RVA gives the user historical media performance, measuring multiple points across the media and per media usage, it provides a vehicle to determine proactively how the media is degrading over its use and over its life. When degradation is detected, the user can proactively copy the data to new media and therefore avoid the situation in which the media degrades beyond recoverability. In this manner the requirement for long-term storage can be met – the data is not necessarily stored on the same piece of media over the data's effective life, but the data itself is assured regardless of the physical medium.

The long-term storage longevity statistics have not been collected as of yet since this is a new product in the marketplace.

**14. Which tape libraries and drives does your solution integrate with?**

The RVA solution has been architected to support the most popular libraries and tape drives found in mid-range and enterprise-class installations. Libraries from Grau, Sun, HP, IBM, Quantum, and Spectra Logic are supported, as well as most LTO 2, LTO 3, DLT, and SDLT tape drives. For a complete list of tested devices, please see the Crossroads Interoperability Guide.

**15. My tape library is connected to a Fibre Channel (FC) SAN. Can RVA monitor this environment?**

RVA supports FC tape libraries and FC tape drives. RVA monitors these devices out of band by attaching to another FC port within the fabric.

**16. Does RVA support any other connections besides Fibre Channel?**

RVA will also support Sun libraries controlled via ACSLS Manager over IP. The tape drives, however, must be connected to the same Fibre Channel SAN as the RVA.

**17. Which RVA product is right for me?**

The RV50f is ideal for monitoring small libraries with no more than 90 tape slots. Mid-sized to enterprise-class libraries can be monitored with the RV300f, which starts at 100 tape slots and can be expanded to up to 50,000 slots. Both products support the ArchiveVerify feature, and both offer the same level of detailed, automated reporting, user-defined alerting, easy-to-use web-based configuration and user interface.

**18. Who at Crossroads, should I contact if I need more detailed, technical information on this solution?**

Please contact your sales representative at 1-866-BUY-CRDS (1-866-289-2737)

**19. If I am interested in purchasing this solution, who should I contact?**

Please contact your sales representative at 1-866-BUY-CRDS (1-866-289-2737)

**20. Where can I review more information about RVA on your website?**

<http://www.crossroads.com/Products/RVA.asp>



**Crossroads Systems, Inc.**

11000 North MoPac Expwy. Ste. 100  
Austin, Texas 78759  
USA

**TEL:** 866.BUY.CRDS  
866.289.2737  
512.349.0300

**FAX:** 512.349.0304

**EMAIL:** sales@crossroads.com

[www.crossroads.com](http://www.crossroads.com)

**Crossroads Europe GmbH**

Marie-Curie-Str. 19  
73529 Schwäbisch Gmünd  
Germany

**TEL:** +49 7171 99800-0

**FAX:** +49 7171 99800-10

**EMAIL:** contact-europe@crossroads.com

**ABOUT CROSSROADS**

Headquartered in Austin, Texas, Crossroads Systems delivers flexible solutions to connect, protect, secure and restore business-critical "data-at-rest." Crossroads (symbol: CRDS) is currently traded on Pink Sheets and also posts its financial disclosure reports, press releases and other related documentation on the OTCIQ web service of the Pink Sheets website. For more information, please visit [www.crossroads.com](http://www.crossroads.com).



Crossroads promotes institutional and personal environmental responsibility within the company, with our partners and with the users of our products. We are committed to providing the best products and services while encouraging practices consistent with sustainable living and resource conservation.